3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

342 from four inches to a foot above the level of the main floor, and are most frequently used as sleeping platforms or as storage places for various articles.

352 In this region where the rainfall is so great and where the sun rarely shines, one of the serious problems is that of keeping clothing and other articles dry. To accomplish this, there is constructed at one side, usually at the rear of the house, or behind that portion in which the fire-box is situated, a drying platform, constructed of large bamboo stems laid side by side, without a roof, and ordinarily on or nearly on a level with the main floor. The convex surface of the bamboo permits the water falling upon it to drain readily to the ground, while the impenetrable outer surface of the bamboo permits no rain to be absorbed by it. Thus, in a few minutes after a rain, this raised platform is usually dry enough to permit the spreading upon it of clothing, or
• [227] of mats for the drying of cacao. At one side of this drying platform is placed a horizontal bamboo pole, usually as long as the platform and raised six or seven feet above it, for use in drying large fish-nets.

[251] On the rafters of the house, and hence high up in the interior, is constructed a platform, or loft (pl. XIV), usually of bamboo, which is used for the storage of old utensils, food, and articles not in daily use. Ordinarily this storage loft does not cover a space equal to more than one-quarter that of the floor of the house itself, and frequently it is much smaller, although always of sufficient capacity to accommodate all the surplus stores of the family.

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

226 The Cayapa make frequent journeys to the ocean, chiefly for the purpose of securing shellfish and crabs, which are abundant along the beaches about the mouth of the river. There are several species of clams and mussels, as well as oysters in large numbers. Also crabs of several species are very abundant, and are captured usually by digging out their burrows. Both the shellfish and the crabs are brought alive up the river, the crabs being confined in coarse baskets. Oysters are usually heated over coals sufficiently to cause the shells to open, and are eaten directly from the shells with a bit of salt or lemon; but clams and mussels are generally boiled. Crabs also are almost always boiled, although sometimes they are roasted.

[182] 252 [263]

226 Inland, along the banks of the Rio Cayapas and its tributaries, are obtained three other foods of the same class. In the wet soil of the jungle live large numbers of a small, bright-red land crab, called nē'lē, or, more specifically, kaia'pa nēlē. This crab has one very large arm, which is the only part used as a food. The crabs are caught in great numbers, and the large arm is removed and roasted. In the waters of these streams are also large numbers of a small species of lobster or crayfish, called pi'cē, which is considered an excellent food. It is caught with a special dip-net, called cia, used almost exclusively for this purpose. The third food of this class is likewise obtained from the rivers. It is a very small bivalve, resembling a miniature mussel such as is found in the ocean, and is gathered at certain points along the streams where the rock walls of the banks or where bedrock affords convenient lodgment.

[252] [227]

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

made more effective, in case the single log above mentioned is not sufficiently heavy, by superimposing upon it another which not only adds weight and enables the trap to kill larger animals, but accelerates its action and diminishes the possibility of the game escaping after the trap is sprung but before the log can fall. Such a second log is usually a foot or so shorter than the other.

Fishing

The numerous streams of the Cayapa region are well stocked with various kinds of fish, many of which are used as food by the Indians. They are at present caught by six different methods. There are three types of nets, the "re," or large set-net, the atarraya or conical casting-net, and the small dip-net, used incidentally in connection with the set-net. These are all used to a considerable extent, especially the set-net; but the "corral," or impounding trap, the pole and line, and the "gig," or fish-spear, are much more generally used. Of these six devices, four only, the set-net, the dip-net, the corral, and the gig, appear to be of aboriginal origin.

The re, called in Cayapa wa'kū, is, like the other two nets used by the Cayapa, made of pita fiber string and is used especially in catching a very excellent species of shad (Spanish, sabalo), called by the Cayapa awi'li. For this purpose it is made with a mesh of about three inches, and varies in length from about twenty to sixty feet according to the width of the particular estero in which it is to be used. Usually near a house there are one or more esteros where shad are fairly abundant,

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

226 but they cannot be taken at all times. When the river is in flood, the shad go in large numbers up the estero in search of certain vegetal foods which are made available by the rise of the water, and it is customary to set a net across the mouth of an estero at about the time the flood commences to recede. As the water level 226 lowers, the fish endeavor to return to the main stream, 227 but are impounded near the mouth of the estero by the net, which is securely fastened at both ends and is weighted down with stone sinkers called cō'pōka or cō'pōka (literally stone), along the bottom, these being wrapped in the tough leaf called ā'tya haki to prevent them from wearing the cords by which they are tied to the edge of the net. These sinkers are usually water-washed pebbles ellipsoidal in form and weighing not more than a few ounces each. The sinkers are trampled into the mud in order that no openings are left through which the fish may escape into the main stream. The upper edge of the net is kept up to the surface of the water by means of floats, called walū de"pōka, consisting of variously shaped blocks of balsa, a species of very light wood, and is supported also by one or more vertical poles stuck securely into the mud at the bottom of the estero and to which the upper edge of the net is tied. This last precaution is necessary because with the recession of the water there comes a considerable amount of small drift-wood and leaves which would gather about the floats of the net and finally sink its upper edge, at least in places, thus allowing the fish to escape.

226 When the water has sufficiently subsided so that the

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

fish and kills with a club the larger ones which might flop over the gunwale. Finally, all the fish possible having been taken in this manner, the set-net and the seine are taken up and brought back to the house. Both are carefully washed and cleaned at the river after having the stone sinkers removed, and are then hung up on a long bamboo pole especially provided for this purpose, over the drying platform at the side of the house. When thoroughly dried these nets are each carefully folded and then compactly twisted, in such fashion as is shown in pl. CXX, 2. The stone sinkers are unwrapped and stored away in a basket until again needed. The floats used on the net here shown measure about four by eight inches by three-quarters of an inch. In many other cases the floats are of various other forms. They are quite often cylindrical.

Nets called atcí wa'kû, of the same kind but with smaller meshes, are made for catching curtain other species of fish. In general, however, the use of the seine is confined largely to catching shad, as above described.

The atarraya, which name is corrupted by the Cayapa into ata'ia, is a large conical casting net heavily weighted about its mouth with lead or, when this is not available, with stone sinkers. In pl. CXX, 1, is shown one of these nets weighted with lead sinkers weighing in the aggregate about twenty-five pounds. In this illustration it is shown folded at about its middle, while the upper end or apex of the cone is wrapped around the remainder of the net. To the point of the cone is attached a long, heavy cord, the end of which is held in the hand when

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

fish are allowed to fall into the bottom of the canoe or into a basket, and the net is then ready for a second cast. This net serves only for taking small fish, and is not very much used by the Cayapa. Apparently their knowledge concerning this form of net was acquired from the negroes. At any rate their knowledge of its use is comparatively recent.

The dip-net, called by the Cayapa cī'a, above referred to, is a small-meshed conical net and is used not only for fishing, as above described, but especially is it employed for catching the small lobster, or crayfish, called by the Cayapa pī'cū or a'tācū, which is so abundant along the banks of the river and especially along the banks of the esteros tributary to the river. The opening of this dip-net is held in shape by a hoop made of a pliable vine simply bent around and its two ends tied firmly together. Thus one end of the hoop is rounding, and the opposite end, the one used as a handle, is fairly sharp-pointed. The dimensions of this opening are perhaps fifteen to twenty inches by thirty to thirty-six inches, and the distance from the rim to the point of the cone of the net itself is from twenty-four to thirty inches.

All nets are made from pita-fiber string, the details of the making of which, as also of net-weaving, are treated in the discussion of cordage and netting.

A corral, or impounding trap, such as that shown in pl. LXVII, is used by almost everyone living along the tidewater portion of this river system; and, owing to the level character of this coastal plain, the tidal rise

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

it is then that the shad travel near the bank in search of food. Furthermore, the opening of the trap is ordinarily somewhat above water at low tide, as is shown in the illustration above mentioned, the photograph for which was taken at very low tide and when the whole corral was entirely above the water line. The greatest of care must be exercised in watching one of these corrals, since the fish are easily alarmed and any noise or unusual movement about the corral is likely to frighten them away. Frequently, in order to render the surroundings more realistic and natural, some palm-leaves or some branches of trees are placed in or along the bank about a corral. The trap being sprung, the fish are impounded until the tide ebbs, when they are left in very shallow water, or even in the mud itself, and may be easily taken from the corral. The catch in one of these corrals is, of course, very uncertain, but frequently several fish are taken at one time, and while shad are especially sought, various other fish are impounded as well. 226

Fish-spears or gigs are of two kinds. That at present in use for large fish is of the ordinary trident form, called s'ata in Cayapa, and is strictly an introduction of civilization. Its head nowadays is made by blacksmiths at the coast. The pole on which this head fits is from ten to fifteen feet in length. One end of the pole is split and the flat tang of the spearhead is inserted, the joint being securely wrapped with pita string, which is water-proofed and protected by means of beeswax. As an additional precaution against loss, 227 [11]

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

227 several stout strands of pita cord are fastened securely to the head at the point where the prongs branch off from the tang, and these are attached to the pole at a point a few inches up from the head. Thus in case the head should pull out of its socket it is still securely fastened to the pole and cannot be lost.

The other form of fish-spear, called in Cayapa pätyä'lya, is made usually with a long, slender, palm-wood pole not more than half an inch in diameter, the prongs being made from heavy fish-hooks which have been straightened out. The point of the pole is fairly flat and about an inch in width. From two to four straightened fish-hooks are bound to this flat point by means of pita cord, which is then thoroughly covered with bees to make it impervious. This form of gig is suitable only for catching very small fish. While the 226 227 [77] gigs of the present time are thus made of iron, the aboriginal spears were similarly shaped but were provided with points of hard palm-wood.

227 225 Another gig, made in the same manner as the last, but usually with a heavier pole and heavier points, is used for spearing water-turtles, which are fairly abundant here. This gig is called pätyä'lya, as well as hwe'ska or hwa'ska, and the only marked difference between it and the fish-gig just described is that its points have no barbs. It is said by the Indians that it is impossible to pierce the shell of a turtle with a barbed gig, but that the barbless point passes through the shell easily. The tarrapins, or land turtles, having harder shells, are always caught by hand.

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

At the present time the hook-and-line is very much used in fishing, though this was introduced by the whites. Strong, slender, fish-poles, called wañgû-tca'll, seven to ten feet in length, are made from the upper branches of the large bamboo. They are gathered when thoroughly matured but while still green, and are hardened and straightened by heating. The lines, called wañgû-tcû'a, or sañ-dû'a, are made of native pita string and are usually quite fine. The strength of the pita fibers makes it possible to use a very fine line for comparatively large fish. Such a fish-line, provided with a special pottery sinker and an ordinary steel fish-hook, is shown in fig. 9; it is wound in this case on a cylindrical piece of balsa. This line is called tcûndyé'pû and is used in the hand after the fashion of a troll. In case it should be dropped or pulled overboard, it is saved by means of the balsa float. Ordinarily all lines are provided with lead sinkers, but the pottery cylinder especially made as a sinker is an old type and was formerly very much used. Hooks, called weñgô'la, are now obtained from traders at the coast, although it is

FIG. 9.—Fish-line with pottery sinker

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

said that when this method of fishing was first introduced through contact with the early Spaniards, crude hooks were fashioned by hammering out pieces of iron.

At the present time this method of hook-and-line fishing is so much in vogue that almost every man has his special little canoe and a special short paddle which are used almost exclusively for fishing. It is customary to paddle for some distance against the tide or current and then to fish back down with the current along the bank. In this way little effort is required in paddling, and a sculling motion of the paddle with the left hand is sufficient to keep the canoe in its desired course. With a pole and line go a small, hemispherical, calabash dish of angle-worms, a small bottle-shape basket (pl. XCIII, 3) of grasshoppers, or a calabash of a certain small reddish fruit, all of which are used as bait, each according to the kind of fish sought.

On rare occasions the trot-line, called weñgūtcū'a (?), such as that shown in pl. CXIX, 1, is used. The main line, called señgi'ri, is made usually of the coarser string fiber called by the Spanish term cosadera, while the small "leaders," called simply sañdō'a, to which each separate hook is attached, are made of pita string.

WAR

The Cayapa maintain that in ancient times they rarely went to war, and then only on the greatest provocation, as, for instance, when they were harrassed by the former inhabitants of their present domain until forbearance was no longer possible and they descended from their

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

the floor and the stone inverted over it to keep its grinding surface away from the dogs. When again needed it is cleaned by taking a cooked plantain, grinding it upon the stone, and rolling it around thoroughly over the grinding surface. This process takes up all the fragments of plantain left from the previous grinding, and thoroughly cleanses both the mealing stone and the muller. The ridges on the two sides and one end of the mealing stone help to keep the plantain from flying off during this grinding. The lack of a ridge along the second end, however, is of advantage in grinding green corn, which process has already been described.

Now and then the mealing stone and muller are used for treating other products, such as the inner pulp of the fruit of a tree called ma'iñ-tcī, which is ground and mixed with balsa charcoal to make the black face-paint called ma'lyū.

The only other native stone implement is that used as a sinker on the seine and the casting net. These sinkers are simply waterworn pebbles ranging from two to four inches in length and from an inch to two inches in diameter. They are called cūpū'ka, a general term signifying stone, and appear to have no special name. In large measure these pebbles, unworked, are rolled in the leaf called ū'tya haki and tied directly to the lower edge of the net; but now and then are found sinkers of such form that they are likely to become detached from the net, hence these are provided with rough notches or even surrounding grooves.

Certain smooth stones, and especially black ones, are used in treating the sick.

3: Barrett E-5 (1908-1909)1925
SD6 Cayapa SD6

If possible some ripe-plantain gruel, called ma'la, is poured into the newly-fired pots, which are returned to the embers where the gruel is soon cooked. This cooking serves to fill the pores of the pottery, rendering it practically impervious. If it is not practicable to boil the gruel immediately, the inner and outer surfaces of the receptacles are later rubbed thoroughly with green plantain for the same purpose. This method, however, is considered inferior to the other. 323

All pottery used for ordinary cooking and serving is completed with the firing and the filling of the pores with plantain. Those pots, however, designed for use in fermenting cane-juice in making rum or for the storage of liquids, rather than for use over the fire, are given a coating of brea, usually inside and out, which renders them impervious. It would be useless to apply the brea to pots that are to be placed over the fire, since it melts at a low temperature and readily ignites. Also, if a pot is not intended for storing liquids, there is no reason why it should be entirely impervious, since all earthenware will hold liquids for a short time without allowing moisture to pass through it to any detrimental extent. 323 415

So far as is known, fired clay serves but one other purpose among the Cayapa, that of making small sinkers, called wengötca'll, for fish-lines. These sinkers are either globose or cylindrical, with perforations through the center, and are fired in the same manner as ordinary pots. A line with its sinker is shown in fig. 9 (page 131). 323 227

[p. 182 is blank]

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

any other articles of value he does not deem it safe to leave at home.

These hampers, especially when used in traveling, are tied about the middle with a cord or a woven band, and can be tumbled about without danger to their contents. They are frequently kept filled with articles in storage in the loft of the house, and often are suspended by the above-mentioned cord or band from the rafters or from one of the timbers at the eaves. Sometimes these baskets are made for special purposes. This is the case with the long one shown in pl. XCIII, 2, which was made especially for the storage of spindles, though the usual spindle storage-basket is a long tubular one like those shown in figs. 8 and 12 of the same plate. Another special form is the very small hamper-shape basket, such as those shown in figs. 15–17; these are used as receptacles for trinkets.

The bottle-shape bait basket, tû'ñûtcitci (pl. XCIII, 3), is a very specialized form and, as its name implies, is made for the particular purpose of carrying live insect bait in the canoe while fishing. Its narrow neck is provided with a balsa stopper or with some leaves made into a bundle which serves the same purpose.

Tubular baskets, called tcûrûkû'kû (pl. XCIII, 8, 12), are made especially for the storage of spindles, either full or empty. These baskets are usually from thirty to forty centimeters in length by from seven to fifteen centimeters in diameter. Such a basket is hung by one edge of its opening, so that it hangs at more or less of a slant. It is usually suspended from a rafter or other part of the house-frame near the eaves, within easy

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

283
227

TROT-LINE, BUNDLE OF PITA FIBERS, AND CORSAGE

BARRETT—CAYAPA INDIANS

[p. 278 (2)]

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

283 several other cords are completed, these are added to the braids at the ends. Thus by adding group after group of these braids, when the whole bundle of cords is completed and both its ends are braided it forms a skein of cords which appears like that shown in pl. CXVIII, 3. The skein is kept in this form and the individual cords are extracted from its middle. This tends to pull backward and to loosen the braids at the two ends of the bundle and thus easily to free the ends of the individual cord from the braids.

[824] The other kind of string obtained from the bark of the tree called in Spanish cosadera and in Cayapa sefigi'lya, is made in a manner similar to that employed in making pita string. The fibers used in making this string are obtained by beating out the bark by the method employed in making bark cloth. After being washed, as in the case of bark cloth also, these fibers are dried, folded, and bound into bundles (pl. CXIX, 2). When needed, the sheets are taken from the bundle and the fibers are separated and twisted into a heavy and rather loose cord which serves very well for making a hammock or as the main cable of a trot-line (pl. CXIX, 1), but otherwise is little used. The string bears the same Cayapa name as the tree itself, and its primary use is for hammocks, which are woven with the same technic as are fish-nets, shortly to be described. The meshes are, however, extremely large and are made without the aid of a mesh-stick, being kept sufficiently even by the eye alone.

[352 227]

296

The Cayapa do not splice cords by twisting together the fibers at their ends, as is done by some Indians. An individual pita cord is usually from ten to sixteen feet

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

286 which the weaving is done. By weaving now evenly along this line without adding more meshes to the succeeding lines, a rectangular net of the desired length is produced. The final corner of the net is made by dropping knots and meshes in the succeeding rows of weaving: in other words, by exactly reversing the process employed in starting the original corner.

[284]

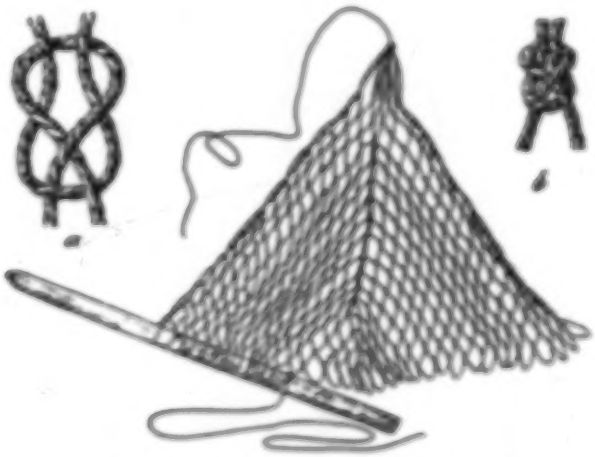

FIG. 27.—Net weaving and detail of knot

All nets are woven with the same type of knot, two details of which are exhibited in fig. 27. In *a* is shown one of these knots opened to a considerable extent, and in *b* this knot is shown as it appears closed and drawn tightly in the net. The use of the mesh-stick is also shown in the figure, which illustrates the beginning of a conical dip-net. The technic of this net differs somewhat from that of the set-net above described, but the knot employed and the use of the mesh-stick are the same.

[227]

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

286 sixty meshes. This number is kept up to the seventh course, where twenty more cords, distributed at regular intervals, are looped in. Hence in the eighth course eighty knots appear. Thus the additions proceed at these regular intervals, twenty new elements being added at every fifth course up to the sixty-second course of knots. Since this process begins at the second course, these additions are made to come on those courses whose numbers end in two and seven—two, seven, twelve, seventeen, etc. Hence, when the sixty-third course is tied there is a total of three hundred knots and meshes, and this number is maintained throughout the remainder of the one hundred and twenty-seven courses of the net. The meshes of this particular net are two centimeters square throughout its length of eight feet, seven inches. As it is cast by a fisherman it easily covers a circle ten or twelve feet in diameter.

227 286 These nets are usually made of fine pita cord in the upper part of the cone and of slightly coarser cord in the last quarter or third near its mouth. The heavier cord is apparently used in this portion of the net because of the greater wear and tear due to the struggles of the entrapped fish and because the net is weighted about its mouth with sinkers. These lead or stone sinkers often aggregate twenty-five to thirty pounds in weight and carry the net quickly to the bottom.

286 [252] The only other netted device made by the Cayapa is the hammock, which is made either of coarse pita string or of the heavy kuna-kuna string. The meshes of such a hammock are very coarse, hence comparatively few cords are required. To start with, the proper number

3: Barrett E-5 (1908-1909)1925
SD 6 Cayapa SD6

227
286

FIBROUS NETS
[p. 284-(1)]